DATING THE GREAT NEW GUINEA-AUSTRALIA VICARIANCE EVENT: NEW EVIDENCE FOR THE AGE OF AUSTRALIA'S TERTIARY MAMMAL FAUNAS

Abstract

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Recent geological evidence suggests that there were only two periods during the Tertiary when Australia and New Guinea were united — the Eocene-Oligocene, and the Pleistocene. The ancestors of most of New Guinea's rainforest-dwelling marsupial/monotreme fauna were likely to have been isolated on New Guinea by the Early Miocene. Pleistocene interchanges were mainly of savannah/woodland species, though some rainforest species did cross.

There are numerous conflicts between this zoogeographic scenario based on systematics, geology and palaeoclimate, and our current interpretation of the age of many Australian "Miocene" mammal faunas. A primary one is that the oldest well-known faunas, currently dated to the Middle Miocene, bear no resemblance to the New Guinean fauna, even at the familial and subfamilial level, but seem to be much more archaic. Australian fossil faunas showing the gr eatest similarity to the New Guinean fauna are those from some of the Riversleigh sites, and those from Alcoota and Bullock Creek. The latest assessments date these sites to the later part of the Mio cene, or at least slightly younger than the Pinpa and Etadunna faunas. In the light of the geological history of Australasia, I suggest that the Riversleigh site may date to earliest Miocene, while the Etadunna and Pinpa faunas are probably late Palaeogene (Oligocene) in age. These revised dates corroborate the zoogeographic scenario proposed above.

☐ *Mammalia, Tertiary, Palaeobiogeography, Australasia.*

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